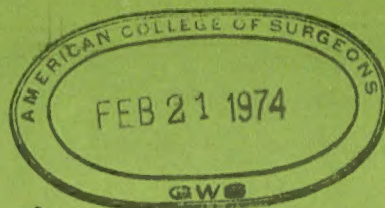


SURGICAL CONGRESS NEWS



Distributed as a service of

Schering

HIGHLIGHTS ISSUE

Reports on
59th ANNUAL
CLINICAL CONGRESS OF
AMERICAN COLLEGE OF SURGEONS

Vol. No. 5



November, 1973

Dr. Claude E. Welch Elevated to Presidency

Model for Specific Tool Against Antigen Developed in Project

A model for a specific immunosuppressive tool against a given antigen was described by a team of investigators from the Pritzker School of Medicine, University of Chicago.

Based on their studies of Lewis X Brown Norway (LBN) rats, the team said, "We conclude that LBN animals can make an antibody to Lewis anti-BN antibody and that this anti-antibody possesses the properties of an anti-receptor antibody."

LBN F₁ adult male rats were immunized with a Lewis anti-Brown Norway alloantiserum, purified by absorption and elution from BN fibrosarcoma membranes. Antibody was cross-linked with glutaraldehyde and administered in Freund's adjuvant. Booster immunization was given three and five weeks later.

In a first set of trials, the animals acted as hosts for local popliteal node graft vs. host
(Continued on Page 2)

Synthetic Fiber Smoke Can Kill in 2 Minutes

Smoke from burning synthetic carpets can kill within two minutes, a Harvard Medical School team warns.

Drs. Donald P. Dressler, Edna Butaney and Anne W. Phillips noted that a smoking acrylic rug produces unconsciousness "so rapidly it may preclude escape," as opposed to wool which has a margin of 12 minutes.

The physicians said that synthetic fibers, such as acrylics, have replaced wool in many homes and business places. They did tests on
(Continued on Page 4)

Predicts Mandatory Licensing by 1983

Recertification and relicensure of physicians will be mandatory within the next decade, predicted Dr. Claude E. Welch, professor of surgery at Harvard Medical School, and newly inducted president of the American College of Surgeons.

Offering this view as his personal opinion, Dr. Welch told the annual clinical congress of the College that "the demands for recertification and relicensure will increase rather than diminish."

As factors exerting pressure in this direction, Dr. Welch noted the public's understanding that medical knowledge doubles in a decade, and that "senescence occurs more quickly in medical practice than in any other profession."

Various agencies, such as the National Advisory Commission on Health Manpower, have
(Continued on Page 2)

Transplants Aided

Patients receiving kidney transplants, following splenectomy, showed a rejection rate of only 3.7% as compared to a rate of 50% in non-splenectomized patients, a team from the Medical College of Wisconsin reported.

In 80 consecutive human kidney transplants (KT), 17 underwent complete rejection (21%). In 27 who underwent pretransplant splenectomy (S-KT), the rejection rate was 3.7%; in 31 who had splenectomy at the time of KT (S+KT), the rate was 16%. Eleven of
(Continued on Page 3)



Dr. Claude E. Welch, left, new President, gets medallion of office from Dr. William P. Longmire, Jr.

Over 16,700 Attend Clinical Congress

CHICAGO — Climaxing an information-packed week attended by 16,723 registrants, Dr. Claude E. Welch assumed office as the 54th President of the American College of Surgeons. Also assuming their new offices were Dr. Harry M. Spence, first Vice-president, and Dr. Charles H. Herndon, second Vice-president. Dr. Charles W. McLaughlin, Jr., was chosen President-elect, Dr. Bentley P. Colcock is first Vice-president-elect and Dr. John C. Gaisford, is second Vice-president-elect.

Four Honorary Fellowships were awarded at the Convocation Ceremonies, to Sir Andrew Watt Kay, Glasgow; Professor Lars-Erik Gelin, Gothenburg, Sweden; Dr. Gerd R. E. Meyer-Schwickerath, Essen, West Germany; and Professor Antonio Gonzalez-Revilla, Republic of Panama.

Other important offices were filled during the meeting, including that of Chairman of the Board of Governors, Dr. Robert C. Hickey; Vice-chairman, Dr. David C. Sabiston, Jr.; and Secretary, Dr. Luis F. Sala.

Drs. Loring W. Pratt, John E. Connolly, and John M. Beal were elected to the Board of Regents and re-elected were Drs. Joseph E. Murray and Carl P. Schlicke. Dr. Frank E. Stinchfield was elected Chairman of the Board of Regents.

The 1973 Distinguished Service Award was presented to Dr. George W. Stephenson.

Six major addresses were given during the sessions that also featured 264 research reports, 16 postgraduate courses, nearly 90 panel discussions, 90 films and Cine Clinics, and closed-circuit TV of actual operations being
(Continued on Page 2)



Clinical Congress is formally opened by Dr. William P. Longmire, Jr., retiring President.

'Artificial Gut' Tested

The "artificial gut," a technique for home infusion of concentrated nutrient solutions, has been successfully used for 14 patients, according to a Seattle team.

"This system . . . has proven to be a safe and economical procedure for providing the daily nutritional requirements for these patients with acute and chronic malabsorption and malnutrition," Drs. Belden H. Scribner and John H. Broviac of the Department of Medicine, University of Washington, reported. "It is favorably accepted by patients and has a profound effect upon their previously dismal life style. It can be used most effectively during the reparative or recovery phase of intestinal function to prevent the onset of nutritional debilitation . . . It appears to be able to offer lifelong nutritional support for those patients not expected to recover small bowel function."

The example of hemodialysis with the artificial kidney prompted the development of the "artificial gut," Dr. Scribner and Dr. Broviac said. A new type of right atrial catheter, suitable for long term use in the home, was designed, and is presently used for circulatory access.

The team said the artificial gut system includes, in addition to the atrial catheter, a "source of sterile nutrients which can be safely mixed by the patient just prior to infusion," a peristaltic pump to control infusion rate, and a portable stand with a monitoring device to signal the patient when the infusion bottle is nearly empty.

"The catheter was designed to be inserted through a subcutaneous tunnel on the anteromedial aspect of the chest wall prior to entry into the subclavian or other appropriate neck vein," the physicians said. "Its attached Dacron felt cuff is located in the subcutaneous tunnel and within a period of 2-3 weeks becomes fixed by fibrous tissue; this cuff prevents accidental dislodgement and acts as a mechanical barrier to bacteria ascending along the outer surface of the catheter."

The physicians said that a typical adult mixture would contain 600 gm dextrose, 42.5-85.0 gm crystalline amino acids, 60-90 mEq sodium chloride, 20-40 mEq potassium chloride, 30-60 mEq potassium phosphate, 9.0-13.5 mEq calcium gluceptate, 2-4 cc 50% magnesium sulfate, and 2 cc injectable vitamins. They added that folic acid (5 mg) and vita-

(Continued on Page 8)

Clinical Congress--

(Continued from Page 1)

performed. Dr. Welch spoke about the inevitability, in his opinion, of recertification and relicensure. Dr. John W. Kirklin presented the 3rd annual John H. Gibbon, Jr. Lecture and Dr. Joseph D. Farrington gave the Scudder Oration on Trauma. Harry Schwartz, PhD, presented the Martin Memorial Lecture. The Hon. Jerry L. Pettis (R-Calif.) a member of the House Ways and Means Committee and Dr. F. Story Musgrave, Manned Spacecraft Center, NASA, Houston, were the other major speakers.

A record 1,675 Initiates became Fellows, marking the 60th anniversary year of the College.



Left to right, Drs. L. D. Maclean, J. H. Davis, J. F. Burke and W. Altmeier discussed infections.

Reject Calcium Gluconate Use In Hydrogen Burns

Calcium gluconate injection under hydrogen fluoride burns is "without value" and the only safe therapy is primary excision and skin grafting, a surgical team from the University of Freiburg, Federal Republic of Germany has concluded.

Hydrogen fluoride burns on rats not treated with calcium gluconate injection healed after 17 ± 3 days while treated rats healed in 34 ± 3 days. Calcium gluconate + hyaluronidase resulted in healing after 27 ± 3 days. Excision, the group pointed out, resulted in primary wound healing after 7 days.

"Calcium gluconate injection combined with hyaluronidase but without hydrogen fluoride burn regularly caused sloughs of the epithelium. Examination of patients who had suffered a hydrogen fluoride burn showed functional and cosmetic disturbances in a high percentage of cases," the researchers said.

Standardized hydrogen fluoride burns were applied to 200 Sprague-Dawley rats, separated

(Continued on Page 8)

Antigen--

(Continued from Page 1)

assays with normal Lewis and BN spleen cells as aggressor cells.

"If the antireceptor antibody present in these animals were to play a role as an antireceptor antibody in selectively blocking lymphoid antigen receptors, then one would predict that the reactivity of injected Lewis spleen cells, responding in this assay because of their receptors for BN antigen, should be suppressed, while the BN cells, responding because of their receptors for Lewis antigens, should not be affected," they said.

However, the team pointed out, results showed suppression of the Lewis aggressor cell graft vs. host reactivity but no effect on the response of BN aggressor lymphocytes.

In a second set of experiments, putative antireceptor antibody, given 24 hours before antigen, suppressed the hemagglutinin antibody response of normal Lewis animals to BN antigens. The antibody did not affect the Lewis response to an unrelated antigen, sheep erythrocytes, demonstrating the immunologic specificity of the putative antireceptor antibody, the investigators said.

Conducting the study were Thomas J. McKearn, and Drs. Frank W. Fitch and Frank P. Stuart.

Link Seen in Cholinergic Stimuli and Increase In Gastric Mucosal cGMP

Data suggesting that cyclic guanosine 3' 5'-monophosphate (cGMP) may act as a mediator of cholinergic stimuli were presented by Drs. John H. Eichhorn, Edwin W. Salzman and William Silen, Harvard Medical School and Beth Israel Hospital, Boston.

Investigating the possibility that cGMP in gastric mucosa varies in response to cholinergic stimuli, the team removed strips of fundic gastric mucosa from 20 adult dogs. Strips were instantly frozen immediately before and after vagus stimulation, vagus stimulation after atropine, acetylcholine (ACh) infusion (1 minute), ACh infusion (3 minutes) and Penta-gastrin infusion.

"Electrical stimulation of the vagus nerves produced a marked increase in cGMP content of fundic mucosa, an effect which was blocked by pretreatment with atropine," the team said. "ACh infusion also produced significant increases in cGMP content but penta-gastrin did not."

Electrical stimulation of the distal transected vagus trunks above the diaphragm increased the cGMP content to 65.7 ± 8.6 (cGMP in picomoles/GM wet tissue) as compared to the controls, 27.7 ± 2.2 . Infusion of ACh (0.05 mg/min) into the celiac artery also produced a significant increase in cGMP content.

However, the team pointed out, pretreat-

(Continued on Page 6)

SURGICAL CONGRESS NEWS

Surgical Congress News is distributed as a service to surgeons by Schering Corporation.

It is published by Academy News Bulletins, Inc., 1414 Avenue of the Americas, New York, N.Y. 10019.

Editorial Director . . . Leo Orris, M.D.
Editor . . . Ruth Norton
News Editor . . . Jerry Faucher
Associate Editors . . . G. P. Dolan
Irving Bazer
Assistant Editor . . . Carol Gilbert
Copy Editor . . . Juanita King

Vietnam War Produced Highest U.S. Incidence Of Eye Injuries in Wars

The highest incidence of eye injuries among American servicemen in any war occurred during the Vietnam War, said Dr. Albert Hornblass, a former military ophthalmologist who is now at the Downstate Medical Center, State University of New York.

Dr. Hornblass said the incidence of eye injuries in the Vietnam War is estimated at between 5 and 9% of all casualties, contrasted with 0.5% in the American Civil War, 2.5% in World War II and 4.1% in the Korean War.

Many men returning from Vietnam have poor vision or are blind, he reported. Rocket, mortar or mine explosions caused most of the injuries; other causes were bullets, grenades, bombs, helicopter crashes and knives. Dr. Hornblass attributed the saving of many eyes to speedy evacuation by helicopter, plus the availability of ophthalmologists in completely equipped facilities.

In another report, Dr. Randall W. Bell of Valley Forge General Hospital, Phoenixville, and Jefferson Medical College, Philadelphia, also said that a greater percentage of seriously injured eyes were saved in Vietnam than in earlier wars because of speedy transporting of the wounded. Other important factors were use of the giant electromagnet, the operating microscope and the indirect headlamp, he said.

Dr. Bell presented a study of 50 patients with foreign bodies, mainly shrapnel, in the eye. "At present it is too early to judge how long the good vision obtained in these eyes will remain, inasmuch as years following such an injury the retina becomes weakened and detaches again," he said. "Approximately half of the group had associated retinal detachment or injury on arrival.

"There is often the probability of a cataract or clouding of the lens inside of the eye after penetration with a foreign body. Other possibilities are recurrent hemorrhage and glaucoma."

Transplants Aided—

(Continued from Page 1)

the 22 non-splenectomized KT (KT-S) were rejected (50%).

Each group had comparable numbers of live and cadaver donors, the researchers said. Clinically good-risk patients had S+KT while poor risk patients had either S-KT or KT-S.

Of the cadaver donors, 14 KT+S had 29% rejections and 21 S-KT had no rejections.

"This is significantly different ($P < .001$) than the 50% rejection rate in 18 patients in the KT-S group," the team pointed out.

The 50% rejection rate was associated with lower WBC and azathioprine dosage despite the fact that the drug dosage was less than that of splenectomized patients. This, the group said, "may be associated with hypersplenism and splenectomy will usually permit increased azathioprine dosage without leukopenia."

"Reduction in azathioprine dosage because

Warn of Infection In Plastic Grafts

Plastic vascular prostheses are "highly susceptible" to bacteremic infection up to three months following implantation, Drs. Robert J. Swanson and Wesley S. Moore, and Gary Campagna reported.

Following this period, the study suggests that the grafts begin to develop some resistance.

Working with 45 mongrel dogs, the team at the University of California San Francisco School of Medicine performed graft anastomoses and replacement with a knitted DeBakey Dacron graft on 38 and divided the remaining 7 into two control groups.

The animals undergoing resection were divided into time groups and exposed to a single intravenous infusion of 10^7 organisms or coagulase-positive *S. aureus* suspended in 1 liter of normal saline. The time intervals corresponded to three days, one month, three months and four months.

Among the controls, one group of three dogs was not resected or grafted although the abdominal aorta was mobilized. In the second group (4 dogs), no operation was performed. After one month, both control groups were challenged to an infusion of *S. aureus* equal to that of the implant group.

At surgical exploration three to five weeks after infusion, cultures in all seven controls were negative. Infection rate was 100% in the 3-day and 1-month groups. 70% of the 3-month group and 62% of the 4-month group had positive graft cultures. Infection varied "from a modest amount of serous fluid about the prosthesis to a major abscess surrounding the graft. When advanced infection was manifested by a large abscess cavity, generalized sepsis and positive blood cultures occurred."

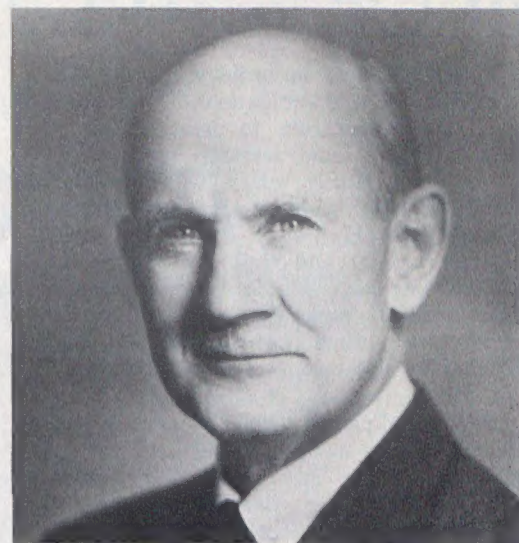
The study suggests, the investigators said, that the growing resistance to infection that occurs with the passage of time is probably the result of an "insulating effect from the pseudointimal lining that develops in these prostheses."

of leukopenia may be a significant factor in high rejection rates seen in non-splenectomized patients. Splenomegaly regularly occurs in both dialysis and transplant patients and may or may not be associated with clinical hypersplenism."

A total of 46 dialysis patients had pre-transplant splenectomy and, of these, 27 subsequently had transplants. Leukopenia was present in 15% and was corrected by splenectomy, the authors continued.

Mean spleen weights for 57 spleens removed before KT were 218 ± 92 gm, "which is greater than normal spleen weights of 150 ± 30 gm," they said, and "mean weights of 15 spleens removed after KT were 319 ± 131 gm, which is larger than spleens removed before KT."

The investigators were Drs. Mark K. Swanson, William R. McGregor, Richard E. Rodgers and H. Myron Kauffman, Jr.



Dr. Charles W. McLaughlin is the newly-chosen President-elect of the College.

Risk of Breast Cancer Higher in Older Mothers

In risk for breast cancer, one multiple nation study indicates that women with a first birth after age 35 run three times the risk as those who give birth before the age of 18, according to Dr. Alfred S. Ketcham, clinical director and chief, surgery branch, National Cancer Institute, National Institutes of Health, Bethesda, Md.

"Up to 30 years of age, there is a linear increase in breast cancer with increasing age at the time of first pregnancy," Dr. Ketcham reported. "Regardless of pregnancy, younger women tend to have substantial breast cancer increases in both incidence and mortality rates."

Other factors associated with increased risk include early menarche, late natural menopause, and history of cystic mastitis. In addition, Dr. Ketcham noted, "there are families who exhibit dramatic cancer propensities. The fact that sisters, mothers and possibly other blood relatives of breast cancer patients exhibit the same kind of abnormal steroid patterns as their cancer relatives indicates genetic and endocrine predisposition, rather than common environmental factors."

Hormonal factors also play a role. Dr. Ketcham pointed out that following surgical menopause, there may be up to a 40 per cent reduction of risk. "This is most notable in women who had oophorectomies in their 40's," Dr. Ketcham said. "It must be remembered that 25 to 35 per cent of women in the United States undergo pelvic surgery resulting in menopause."

"This more often is carried out after 35 years of age, so the effect on risk is minimal. Nevertheless, the 70 per cent reduction in risk in women who had surgery before the age of 35 indicates an etiological role for ovarian activity in at least two-thirds of such breast cancer patients."

Dr. Ketcham noted that breast cancer rates among Jewish females "approach a double increase in usual incidence." This, he said, is particularly true in U.S.-born Jewish women of high socioeconomic status. "In contrast, the

(Continued on Page 8)

RNA Viruses Linked to Urothelial Tumors

Latest advances in urology include the introduction of a combination of trimethoprim and sulfamethoxazole to treat chronic urinary infections, and research suggesting that RNA tumor viruses may cause urothelial tumors, according to a report by Dr. James F. Glenn, Duke University Medical Center.

"Other major and clinically applicable advances have been made in the realms of pediatric urology, reconstructive surgery of the urinary tract, renal transplantation, diagnostic capabilities and calculous disease," he said.

Dr. Glenn listed ultrasonography as an effective technique in diagnosis of renal masses. He added that ultrasound has also been used as a therapeutic measure, saying that Lutzmeyer and his colleagues have "accomplished ultrasonic litholapaxy which appears to be a method at least as effective and perhaps less traumatic than either mechanical or electrohydraulic lithotripsy."

Dr. Glenn singled out the research by Fraley and Elliott at Minnesota, Murphy at Roswell Park, and Bonar and Paulson at Duke. "In Fraley's laboratory, virus particles morphologically similar to C-type RNA viruses have been consistently demonstrated in urothelial tumors of the renal pelvis, ureter and bladder, suggesting that such patients may have been



Drs. James F. Glenn, left, and Saul Boyarsky, seen at session on urological problems.

infected at one time with a virus which awaits further identification and characterization but which has been tentatively named EFMU," he said.

Changes in renal lymph following renal transplantation have been further studied by Cockett and colleagues. "Chronic systemic immunosuppression reduces the development of immunocompetent cells in renal lymph, and cellular destruction occurs without mediation of complement, suggesting that the kidney may act immunologically as a lymph node," Dr. Glenn noted.

78.6% Accuracy Found In Tumor-Seeking Drug

Use of a new radioactive, tumor-seeking drug, ^{111}In -bleomycin, in 75 cancer patients scanned, resulted in 78.6% accuracy, it was reported to the Clinical Congress.

"Total body scanning showed excellent correlation in 59 of 75 patients," Drs. Melvin J. Silverstein, Ramesh C. Verma, Juan J. Touya, Leslie R. Bennett and Donald L. Morton of the University of California at Los Angeles said.

"Unexpected disease was found in eight patients," they noted. "There were two false negatives, and five false positive results. The remaining nine patients had abnormal accumulations in areas of known non-neoplastic disease (i.e., areas of radiation therapy, lymphedema, etc.)."

The physicians pointed out that the earlier they can detect disseminated disease, the earlier they can begin appropriate therapy.

"The usefulness of accurate pre-operative staging cannot be overemphasized," the team said. "It may prevent patients with occult metastatic disease from needless radical surgery, while it may extend to other patients a chance for surgical cure."

Lethal Smoke—

(Continued from Page 1)

rats, using acrylic carpeting as a source of smoke, with wool and white pine as controls.

In tests with 750 rats in a special chamber, the researchers reported that "as might be expected the higher the temperature, the greater the mortality, and similarly, mortality increases with the length of exposure for any given temperature."

In contrasting death rates on exposure to smoke from acrylic and wool rugs, the physicians found that "smoldering caused no deaths with either type of carpet if the smoke was inhaled at room temperature."

The researchers were amazed to learn that smoke from ignited acrylic carpeting was "uniformly fatal." They noted that if "the number of minutes until unconsciousness, convulsions or death are compared, it will be noted that in comparison with wood, in which no deaths occur in the chamber, acrylic rug produces unconsciousness so rapidly it may preclude escape."

They also warned that "if one is asleep, awareness may never come at all." Nylon carpeting, they added, seems to be even more dangerous than acrylic carpeting. "Methylmethacrylate has rendered some of our rats unconscious in 30 seconds," the physicians said.

"The reason for this cannot be accounted for by changes in the environmental oxygen, CO_2 or CO , or in the arterial pH and blood gases," they noted. "A comparison of the microscopic appearance of the lungs shows severe hemorrhagic edema occurring within two minutes in animals exposed to acrylic smoke."

The team maintained that flammability tests no longer are sufficient, and that "biological tolerance standards," based on thorough laboratory investigative work, must be developed.

CNS Injury May Affect Stress Ulcers

The pathogenesis of stress ulcers may differ in patients with central nervous system (CNS) injury, as compared with non-CNS injured patients, Dr. John C. Bowen, Division of Surgery, Walter Reed Army Institute of Research, Washington, D.C., reported.

In studies of 39 severely injured U.S. servicemen in Vietnam, investigators found the serum gastrin concentration "significantly higher" after CNS injury, than after non-CNS injury.

"Five patients with either penetrating cerebral or spinal cord injury had mean SG levels greater than 150pg/ml," Dr. Bowen said. "In the non-CNS injury group, there were no increased SG levels."

Dr. Bowen said that because of lack of understanding of the pathophysiology of stress

ulceration, the acute upper gastrointestinal ulcers found after all types of trauma had frequently been lumped together.

"However," he said, "several findings now suggest that the CNS-related stress ulcer is a distinct pathophysiological entity," as distinguished from the non-CNS related stress ulcer. Dr. Bowen added that the study showed increased gastrin release after CNS injury.

Gastrin release and gastric hypersecretion after CNS injury is thought to be mediated through the vagus nerves. "Our study demonstrates increased serum gastrin release in five of the 16 patients with CNS injury, suggesting that the vagal release of gastrin has clinical significance in humans after some forms of CNS injury," Dr. Bowen said.



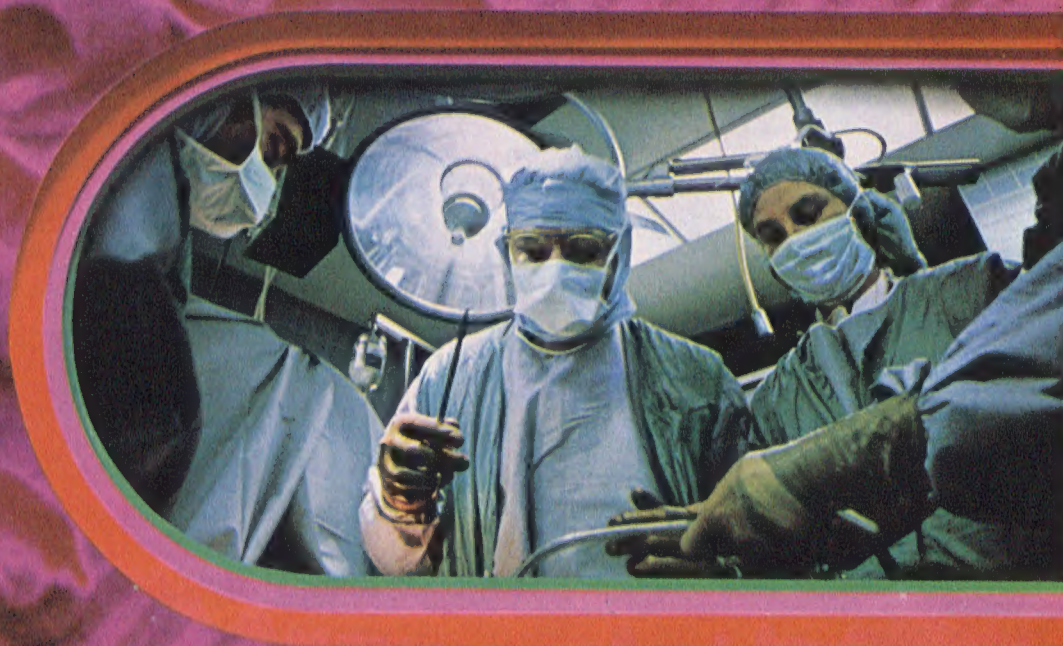
Surgeons exchange comments on papers as they take a welcome stretch in midmorning at McCormick Place.

Schering

On the surgical
service...

a major problem

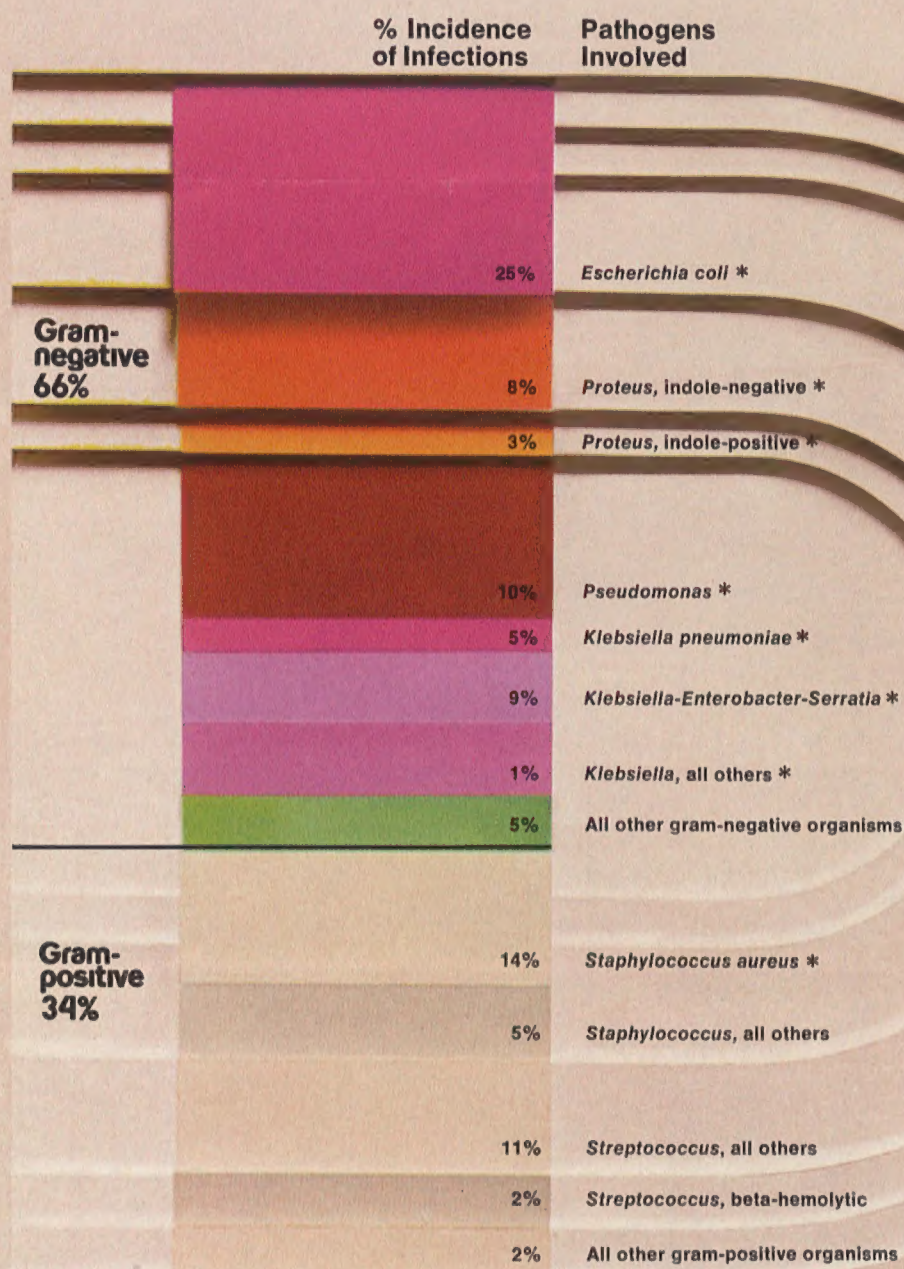
2 out of 3
postoperative infections
are gram-negative



Gram-negative bacteria magnified 10,000 times—color-tinted

Commonly encountered pathogens on the surgical service

**NEW UPDATED
INFORMATION**



Total Pathogens 6,663
Source: Lea Audit of Pathology Cultures—7/72—6/73

*GARAMYCIN® Injectable (gentamicin sulfate) is effective against susceptible strains of the pathogens indicated.

A highly appropriate spectrum for today's problem pathogens

GARAMYCIN Injectable offers a high probability of effectiveness against susceptible strains of seven out of seven major gram-negative pathogens. These are:

Escherichia coli
Proteus, indole-negative
Proteus, indole-positive
Pseudomonas aeruginosa
Klebsiella
Enterobacter
Serratia } species

GARAMYCIN Injectable has also been shown to be effective in serious staphylococcal infections. It may be considered in those infections when penicillins or other less potentially toxic drugs are contraindicated and bacterial susceptibility testing and clinical judgment indicate its use.

Start with Garamycin

■ Broad gram-negative spectrum

Because of its broad gram-negative spectrum and its well-established clinical efficacy, GARAMYCIN Injectable can be considered for initial therapy in suspected as well as documented gram-negative sepsis.

Stay with Garamycin

■ Susceptibility of causative organisms confirmed

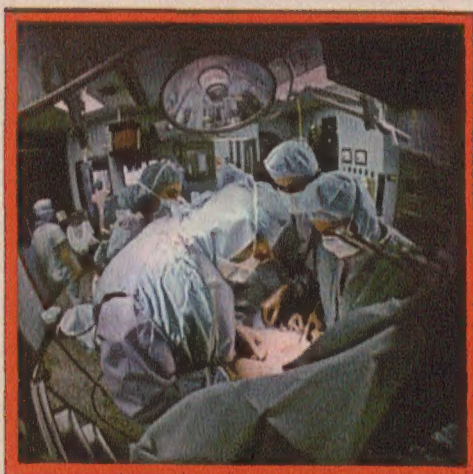
The results of susceptibility tests will, in most cases, demonstrate the causative organisms' sensitivity to GARAMYCIN Injectable. However, the decision to continue therapy with this drug should also be based on the severity of the infection and the important additional concepts contained in the Warning Box.

■ Relatively low incidence of adverse reactions

Risk of toxic reactions is low in patients with normal renal function who do not receive GARAMYCIN Injectable at higher doses or for longer periods of time than recommended.

■ Bacterial resistance has not been a problem

In the laboratory, resistance has been demonstrated to develop slowly in stepwise fashion. No one-step mutations to high resistance have been reported to date.



On the surgical service...

Garamycin[®]

gentamicin sulfate injectable

I.M./I.V.

40 mg. per ml.

Each ml. contains gentamicin sulfate equivalent to 40 mg. gentamicin

In gram-negative septicemia, peritonitis, postoperative pneumonia, and urinary tract infections*

*Due to susceptible organisms

WARNING

Patients treated with GARAMYCIN Injectable should be under close clinical observation because of the potential toxicity associated with the use of this drug.

Ototoxicity, both vestibular and auditory, can occur in patients, primarily those with pre-existing renal damage, treated with GARAMYCIN Injectable, usually for longer periods or with higher doses than recommended.

GARAMYCIN Injectable is potentially nephrotoxic, and this should be kept in mind when it is used in patients with pre-existing renal impairment.

Monitoring of renal and eighth nerve function is recommended during therapy of patients with known impairment of renal function. This testing is also recommended in patients with normal renal function at onset of therapy who develop evidence of nitrogen retention (increasing BUN, NPN, creatinine or oliguria). Evidence of ototoxicity requires dosage adjustments

or discontinuance of the drug.

In event of overdose or toxic reactions, peritoneal dialysis or hemodialysis will aid in removal of gentamicin from the blood.

Serum concentrations should be monitored when feasible and prolonged concentrations above 12 mcg./ml. should be avoided.

Concurrent use of other neurotoxic and/or nephrotoxic drugs, particularly streptomycin, neomycin, kanamycin, cephaloridine, viomycin, polymyxin B, and polymyxin E (colistin), should be avoided.

The concurrent use of gentamicin with potent diuretics should be avoided, since certain diuretics by themselves may cause ototoxicity. In addition, when administered intravenously, diuretics may cause a rise in gentamicin serum level and potentiate neurotoxicity.

USAGE IN PREGNANCY Safety for use in pregnancy has not been established.

See Clinical Considerations section which follows...

On the surgical service...

in gram-negative septicemia, peritonitis, postoperative pneumonia,
and urinary tract infections*

Schering

Garamycin[®]

gentamicin sulfate

Injectable

I.M./I.V.

40 mg. per ml.

Each ml. contains
gentamicin sulfate equivalent
to 40 mg. gentamicin

Also available:
GARAMYCIN[®] Pediatric Injectable, 10 mg. per ml.
20 mg./2 ml. vial

GARAMYCIN[®] Injectable, brand of gentamicin sulfate U.S.P. injection, 40 mg. per ml. Each ml. contains gentamicin sulfate equivalent to 40 mg. gentamicin
For Parenteral Administration

WARNING

Patients treated with GARAMYCIN Injectable should be under close clinical observation because of the potential toxicity associated with the use of this drug.

Ototoxicity, both vestibular and auditory, can occur in patients, primarily those with pre-existing renal damage, treated with GARAMYCIN Injectable, usually for longer periods or with higher doses than recommended.

GARAMYCIN Injectable is potentially nephrotoxic, and this should be kept in mind when it is used in patients with pre-existing renal impairment.

Monitoring of renal and eighth nerve function is recommended during therapy of patients with known impairment of renal function. This testing is also recommended in patients with normal renal function at onset of therapy who develop evidence of nitrogen retention (increasing BUN, NPN, creatinine or oliguria). Evidence of ototoxicity requires dosage adjustments or discontinuance of the drug.

In event of overdose or toxic reactions, peritoneal dialysis or hemodialysis will aid in removal of gentamicin from the blood.

Serum concentrations should be monitored when feasible and prolonged concentrations above 12 mcg./ml. should be avoided.

Concurrent use of other neurotoxic and/or nephrotoxic drugs, particularly streptomycin, neomycin, kanamycin, cephaloridine, viomycin, polymyxin B, and polymyxin E (colistin), should be avoided.

The concurrent use of gentamicin with potent diuretics should be avoided, since certain diuretics by themselves may cause ototoxicity. In addition, when administered intravenously, diuretics may cause a rise in gentamicin serum level and potentiate neurotoxicity.

USAGE IN PREGNANCY Safety for use in pregnancy has not been established.

INDICATIONS GARAMYCIN Injectable is indicated, with due regard for relative toxicity of antibiotics, in the treatment of serious infections caused by susceptible strains of the following microorganisms:

Pseudomonas aeruginosa, **Proteus** species (indole-positive and indole-negative), **Escherichia coli** and **Klebsiella-Enterobacter-Serratia** species.

Clinical studies have shown GARAMYCIN Injectable to be effective in septicemia and serious infections of the central nervous system (meningitis), urinary tract, respiratory tract, gastrointestinal tract, skin and soft tissue (including burns).

Bacteriologic tests to determine the causative organisms and their susceptibility to gentamicin should be performed.

Bacterial resistance to gentamicin develops slowly in stepwise fashion; there have been no one-step mutations to high resistance.

In suspected or documented gram-negative sepsis, GARAMYCIN may be considered as initial therapy. The decision to continue therapy with this drug should be based on the results of susceptibility tests, the severity of the infection, and the important additional concepts contained in the Warning Box. In the neonate with suspected sepsis or staphylococcal pneumonia, a penicillin type drug is usually indicated as concomitant antimicrobial therapy.

GARAMYCIN Injectable has been shown to be effective in serious staphylococcal infections. It may be considered in those infections when penicillins or other less potentially toxic drugs are contraindicated and bacterial susceptibility testing and clinical judgment indicate its use.

CONTRAINDICATIONS A history of hypersensitivity to gentamicin is a contraindication to its use.

WARNINGS See Warning Box.

PRECAUTIONS Neuromuscular blockade and respiratory paralysis have been reported in the cat receiving high doses (40 mg./kg.) of gentamicin. The possibility of these phenomena occurring in man should be considered if gentamicin is administered to patients receiving neuromuscular blocking agents such as succinylcholine and tubocurarine.

Treatment with gentamicin may result in overgrowth of nonsusceptible organisms. If this occurs, appropriate therapy is indicated.

ADVERSE REACTIONS:

Nephrotoxicity: Adverse renal effects, as demonstrated by rising BUN, NPN, serum creatinine and oliguria, have been reported. They occur more frequently in patients with a history of renal impairment treated with larger than recommended dosage.

Neurotoxicity: Adverse effects on both vestibular and auditory branches of the eighth nerve have been reported in patients on high dosage and/or prolonged therapy. Symptoms include dizziness, vertigo, tinnitus, roaring in the ears and hearing loss.

Numbness, skin tingling, muscle twitching, and convulsions have also been reported.

Note: The risk of toxic reactions is low in patients with normal renal function who do not receive GARAMYCIN Injectable at higher doses or for longer periods of time than recommended.

Other reported adverse reactions, possibly related to gentamicin, include increased serum transaminase (SGOT, SGPT), increased serum bilirubin, transient hepatomegaly, decreased serum calcium; splenomegaly, anemia, increased and decreased reticulocyte counts, granulocytopenia, thrombocytopenia, purpura; fever, rash, itching, urticaria, generalized burning, joint pain, laryngeal edema; nausea, vomiting, headache, increased salivation, lethargy and decreased appetite, weight loss, pulmonary fibrosis, hypotension and hypertension.

DOSAGE AND ADMINISTRATION GARAMYCIN Injectable may be given intramuscularly or intravenously.

For Intramuscular Administration:

PATIENTS WITH NORMAL RENAL FUNCTION*

Adults: The recommended dosage for GARAMYCIN Injectable for patients with serious infections and normal renal function is 3 mg./kg./day, administered in three equal doses every 8 hours.

For patients weighing over 60 kg. (132 lb.), the usual dosage is 80 mg. (2 ml.) three times daily. For patients weighing 60 kg. (132 lb.) or less, the usual dosage is 60 mg. (1.5 ml.) three times daily.

In patients with life-threatening infections, dosages up to 5 mg./kg./day may be administered in three or four equal doses. This dosage should be reduced to 3 mg./kg./day as soon as clinically indicated.

*In children and infants, the newborn, and patients with impaired renal function, dosage must be adjusted in accordance with instructions set forth in the Package Insert.

For Intravenous Administration:

The intravenous administration of GARAMYCIN Injectable is recommended in those circumstances when the intramuscular route is not feasible (e.g., patients in shock, with hematologic disorders, with severe burns, or with reduced muscle mass).

For intravenous administration, in adults, a single dose of GARAMYCIN Injectable may be diluted in 100 or 200 ml. of sterile normal saline or in a sterile solution of dextrose 5% in water; in infants and children, the volume of diluent should be less. The concentration of gentamicin in solution in both instances should normally not exceed 1 mg./ml. (0.1%). The solution is infused over a period of 1 to 2 hours.

The recommended dose for intravenous administration is identical to that recommended for intramuscular use.

GARAMYCIN Injectable should not be physically premixed with other drugs, but should be administered separately in accordance with the recommended route of administration and dosage schedule.

HOW SUPPLIED GARAMYCIN Injectable, 40 mg. per ml., 2 ml. multiple-dose vials for parenteral administration.

Also available, GARAMYCIN Pediatric Injectable, 10 mg. per ml., 2 ml. multiple-dose vials for parenteral administration.

MARCH 1973

AHFS Category 8:12.28

017

For more complete prescribing details, consult Package Insert or Physicians' Desk Reference. Schering literature is also available from your Schering Representative or Professional Services Department, Schering Corporation, Kenilworth, New Jersey 07033.

*Due to susceptible organisms

Scudder Orator Advises Emphasis on Emergency Services in Rural Areas



Dr. Joseph D. Farrington

Although advances have been made since 1966 in emergency medical services, much still remains to be done, especially in the training of the entire population in first aid, Dr. J. D. Farrington of Minocqua, Wis., said in delivering the 11th Scudder Oration on Trauma.

"The biggest problem, and where we should concentrate our efforts and resources is the emergency medical services of the rural areas, small communities and small cities," he said.

"Rather than spend federal funds in metropolitan areas with established or rapidly developing emergency medical services systems, it is time they were allocated to the areas of greatest need," he said.

Dr. Farrington warned the surgeons that physicians must take the lead in the development of emergency medical services. "If we do not," he said, "we will be swallowed up by the lay planners who have appeared on the scene in such great numbers recently, eager but uninformed. . . ."

Dr. Farrington traced the development of efforts to upgrade emergency medical services. In 1966, he noted, there were 114,000 deaths, a rate of 58 per 100,000, with 53,000 deaths caused by automobile accidents, for a rate of 5.67 per 100 million miles traveled. He emphasized that 70 per cent of the deaths occurred in rural areas.

"When the number of sudden deaths from heart attacks, 400,000, 50 per cent occurring before they reached medical facilities, was added to the accidental deaths, the load on the emergency medical service systems was enormous," he said.

He noted that in 1966 ambulance services were provided by a variety of organizations: 44 per cent, funeral homes; 24 per cent, voluntary units; 14 per cent, commercial firms; 13 per cent, municipalities; 3 per cent, hospitals and 2 per cent, unspecified. Twenty-one per cent of the vehicles used were hearses, while 24 per cent were station wagons, used for dual purposes by police.

Dr. Farrington said that the American College of Surgeons and the American Academy of Orthopaedic Surgeons cooperated to help improve the emergency medical services. Today, he said, every state has an executive council on emergency medical services, while there has been "a great increase in the number of emergency medical services systems

(Continued on Page 6)

Intraoperative Autotransfusion's Ultimate Value Seen in Managing Vascular Trauma, Aneurysms

The ultimate value of intraoperative autotransfusion (IAT) will probably be found in management of vascular trauma, ruptured aortic aneurysms and "very large electively resected aortic aneurysms," according to Drs. Bruce J. Brener, Jeffrey K. Raines, Carolyn McI. Chesney, Robert W. Colman, and R. Clement Darling of the General Surgical Services, Massachusetts General Hospital.

The Boston surgeons pointed out that in such situations, "volume support is the key to success." They noted that their "most striking findings concerned the effect of aspiration on platelet functioning.

"In every patient tested, the platelets in the aspirated blood failed to aggregate and failed to take up and release serotonin," the physicians said. "This represents a major defect in platelet metabolism. Interestingly, despite reinfusion of these damaged cells, the platelet function in the patient's blood remained normal."

The surgeons said that "when blood loss is under one liter, it (the technique) hardly seems worthwhile." They added that "using large doses of heparin taxes the patience of even the most meticulous surgeon."

Twenty-three resections for patients with large abdominal aortic aneurysms were performed successfully. The surgeons also used the procedure in 15 resections for aorto-iliac occlusive disease. They noted that "many of these latter procedures can be carried out without resorting to IAT since blood loss is often less than 1,000 ml."

On the other hand, they pointed out that the

technique could be "quite useful," as in the case of a 31-year-old woman with complete aortic occlusion below the renal arteries. She was transfused with 500 ml of her previously donated blood and 1,600 ml of blood lost at surgery.

"In this kind of operation, in which repeated flushing of the proximal aorta is an integral part of the operative procedure, return of blood which would otherwise be lost prevented the need for homologous transfusions," they said.

In the first 20 patients with whom the doctors used the IAT, the average volume of autotransfused blood was 1.4 liters. In the next ten elective aortic resections, they said, the average volume replaced was 2.6 liters.

"As a result, the anemia which was noted in our earlier reports became more apparent in this latter group of patients," the surgeons said. "In the first series, the average fall in hematocrit in the ten patients who received no homologous blood intraoperatively was six percentage points. In the second group, none of the patients received banked blood during operation; the average fall in hematocrit was 12 percentage points. In this latter group, eight required transfusion during the postoperative period because of symptomatic anemia."

They pointed out that the fall in hematocrit during IAT was caused by a loss of circulating red cells, and was not due to hemodilution.

Give Honest 'Dollar Hour,' Says Surgeon

An understanding of the patient as a human being, plus a "recognition of the nobility of the human soul," are necessary if a surgeon is to comply with surgical ethics, Dr. George Newton Spears of Ironton, Oh., believes.

Under the need for personal responsibility, the surgeon must upgrade his knowledge constantly, Dr. Spears noted. The surgeon must also recognize his limitations in ability, skill and knowledge, he said.

"Beyond seeking scientific methods of study and experience, a freedom of decision for methods and treatment, he should actively seek consultation when in his opinion it is needed," Dr. Spears said. "He should not refrain from referral when the best interest of the patient requires more intensive care than the surgeon feels he can provide."

Dr. Spears argued that the surgeon has a moral commitment to society, and that "failure of the acceptance of moral responsibility leads to a negative ethical conduct."

Finally, Dr. Spears stressed the importance of recognizing what is known as "the dollar hour" syndrome. "Everything we do costs money and in everything we do, we attempt to charge for our time," he said. "It would be wise for us to study these premises, review them, reevaluate ourselves, and try to give an honest dollar hour."

At the same session on "behavioral surgery,"

Dr. William B. Hobbins of Madison, Wisc., urged physicians to "take a spiritual history" of the patient.

"Nowhere in medical teaching except generalization in courses of ethics are physicians taught to elicit the patient's spiritual history, or are they taught as to its over-all importance in the great trinity of body, mind and soul," Dr. Hobbins said.

"In my practice," he added, "I have found that the added dimension of spiritual knowledge of the patient releases great understanding and powers in using the tools of healing and wholeness that God has given to the physician through his talents."



Part of a record number of Fellows initiated at this Congress.



Moderator of this panel is Dr. J. Engelbert Dunphy. Panelists include, left to right, Sir Andrew Watt Kay, Drs. Lawrence W. Way, William P. Longmire and Frank Glenn.

Early Blood Gas Analysis Urged in Hypovolemia

Techniques for monitoring and fluid replacement in seriously ill patients admitted to emergency rooms in a state of hypovolemic hypoperfusion were described here by Dr. Arlie R. Mansberger, Jr., of Baltimore.

In advocating early blood gas analysis, Dr. Mansberger pointed out that "the central problem in hypovolemic shock is hypoperfusion and the associated impairment and eventual failure of oxygenation at a cellular level."

The blood gas analysis should provide an indication of pre-shock pulmonary function "since near normal arterial pO_2 values is the rule, rather than the exception, in this group of patients when measured early in the course of the illness," he said.

Dr. Mansberger pointed out that the hypovolemic patient may occasionally show a metabolic alkalosis at first appearance. "This patient may be 'pink,' suggesting excellent perfusion," he said. "However, blood gas analysis will not only demonstrate a normal pO_2 but a narrowed A-V oxygen difference which on occasion is compounded by respiratory alkalosis."

Another technique suggested is monitoring of urine via catheterization. Dr. Mansberger pointed out that the initial output of urine in hypovolemic shock rarely exceeds 20 ml per hour or 1 ml per three minutes. He added that successful restoration of renal blood flow should produce a urine volume of 40-60 cc/hour.

Dr. Mansberger also suggested that left atrial pressure be monitored. "The use of the balloon-tipped, flow-guided Swan-Ganz pulmonary artery catheter not only allows for the bedside measurement of pulmonary wedge pressures and thus obviates the occasional problem, but also allows for sampling of true mixed venous blood and thus measurement of the cardiac output by the Fick principle," he said.

Ringer's lactate solution was advocated for immediate fluid replacement. Dr. Mansberger suggested that patients with anemia and an elevated central venous pressure receive packed red cells. "In conditions where there is excessive loss of plasma volume, i.e., pancreatitis, peritonitis, burns, etc., the use of plasma and/or electrolyte solution to which albumin has been added is of great benefit," he said.

Rigid Asepsis Reduces Septicemia in Study Of Oncologic Patients

As a result of strict aseptic technique in debilitated oncologic patients, catheter-related clinical sepsis occurred in only 2.2 per cent of 93 patients undergoing intravenous hyperalimentation for ten days or more, it was reported here by a Houston team. This was termed the "lowest" percentage yet reported in a prospective study of such patients.

A subclavian catheter microbial contamination rate of 7.3 per cent in the patients was also reported by Drs. Edward M. Copeland, Bruce V. MacFadyen Jr., Curtis McGown and Stanley J. Dudrick, of the University of Texas System Cancer Center, M.D. Anderson Hospital and Tumor Institute.

The physicians noted that prior to 1968, reports of septicemia secondary to *Candida albicans* were rare. "Currently, however, it is the most commonly reported organism associated with catheter-related sepsis," they said. The authors suggested that the increase has been caused by failure to follow rigid aseptic and antiseptic maintenance of the hyperalimentation delivery system.

"Most hospitalized cancer patients receive therapy which predisposes them to infection, especially with *Candida albicans*," the team said.

The physicians said that in carrying out the study, all catheters were inserted by them, using "strict aseptic technique." In addition, each dressing was aseptically removed. They said that 110 catheters were in place for ten days or longer in 93 patients.

"The average duration of central venous catheterization in these 93 patients was 24.8 days," the team reported. "The longest time a single catheter was in place was 96 days. Multiple catheter changes were frequent. One patient with a small bowel fistula required five catheter changes during a period of hyperalimentation lasting 74 days."

They said that eight of the 93 patients on long-term hyperalimentation died; three of these patients had positive catheter tip cultures, but only one patient "manifested generalized candidiasis at death or at postmortem

(Continued on Page 8)

Regional Perfusion Useful in Arthritis

Vascular regional perfusion, now used widely in treatment for malignancy, appears to be useful also in treatment of arthritis in animal studies.

Results of perfusing arthritic dogs with hydrocortisone, indomethacine, and phenylbutazone were reported here by Dr. John Robin deAndrade of the Emory University School of Medicine, Atlanta.

"Preliminary experiments indicated that it was valid to compare one radiocarpal joint in the dog with the opposite fellow," Dr. deAndrade said. He added that in each instance, the side perfused by the drugs "was less swollen than the control."



Dr. John Robin deAndrade

Services—

(Continued from Page 5)

with appropriate advisory councils at the local and regional level."

In addition, 26 states now have legislation affecting ambulance service, a 50 per cent increase since 1966. He also said that "among smaller one-hospital communities, the number of hospital-based ambulance services has risen from 3 per cent to 5 per cent, a small but significant increase."

Dr. Farrington pointed out that in 1969, a curriculum for a basic course of instruction in emergency care, consisting of 24 lessons, was published by the American College of Surgeons. This basic course has been adopted by 44 states, and "at last report, more than 50,000, or 20 per cent, of the ambulance personnel had completed this program," he said.

Link Seen—

(Continued from Page 2)

ment with atropine (1.0 mg/5kg) before electrical stimulation, produced a decrease to 35.2 ± 5.5 as opposed to controls, 39.1 ± 5.1 . Pentagastrin infusion IV at 10 mg/kg/hr, until acid production was seen, resulted in no significant increase, 28.7 ± 2.1 compared to 29.0 ± 2.3 in controls.

"These data demonstrate an association in vivo between cholinergic stimuli and an increase in gastric mucosal cGMP. Because pentagastrin did not cause a similar effect, it appears that the rise in cGMP following vagal stimulation resulted from direct cholinergic stimulation of the fundic mucosa rather than secondarily from the action of antral gastrin," the investigators concluded.

Traditional Ceremonies . . .

Dr. Brian B. Blades delivers his speech on "Evarts A. Graham: A Benign Paradox," at the opening ceremonies of the Clinical Congress.



Convocation ceremonies, a traditional event at meetings of the College, are held. Leading the procession is Dr. Floyd H. Jergesen, Secretary.



Presidential Address is delivered (left) by Dr. Claude E. Welch, newly installed president of the College. Dr. Welch, who is professor of surgery at Harvard Medical School, predicted mandatory relicensure in the next decade.



In installation ceremonies, Dr. William P. Longmire (right), congratulates Dr. Harry M. Spence, new first vice president of the College.

Panelists Field the Questions . . .



The questions came rapidly at the session on What's New in Surgery. Left to right are Drs. Gerald W. Peskin, Samuel L. Kountz and Loren E. Humphrey.



In scene at right, panelists are, l. to r., Drs. Frank R. Hendrickson, Gerald E. Byrne and Tapas Das Gupta.



O.R. asepsis was discussed by panelists (l. to r.) Drs. Richard E. Clark, Frank J. Vieth and J. Wesley Alexander.



Hon. Jerry L. Pettis (R-Calif.), House of Representatives, addresses the audience after introduction by Dr. Frank Hinman Jr., seated.

Hydrogen Burns—

(Continued from Page 2)

into four groups: Group A rats were untreated and served as controls. In Group B, necrosis was excised 45 minutes after burning. Group C rats were injected with calcium gluconate under the burn and Group D were injected with calcium gluconate and hyaluronidase. Histological examinations were made to determine the size and extent of necrosis. In addition, 50 patients with hydrogen fluoride burn were examined, the group said.

Breast Cancer—

(Continued from Page 3)

rates are low for Italian-born women, regardless of socioeconomic class," he noted.

In another paper, Dr. Frank C. Sparks, department of surgery, division of oncology, UCLA School of Medicine, reported that adjuvant immunotherapy or chemotherapy increased survival and prevented death from metastases in rats with mammary adenocarcinoma 13762.

Dr. Sparks pointed out that the survival of women with breast cancer "is limited by subclinical microscopic metastases present at the time of operation." In rat studies, post-operative immunotherapy with BCG, given weekly to one group of rats for 20 weeks, resulted in a 62 per cent survival rate, he said.

Dr. Sparks announced plans for a program of chemotherapy for women with breast cancer. "When the nodes are involved, and therefore the risk of recurrence high, patients will be randomized into one of three groups," with the first getting no further therapy, he said.

"The second group will receive cyclic chemotherapy consisting of a modified Cooper's regimen for one year," Dr. Sparks said. "A third group will receive weekly BCG immunotherapy for one year."

Licensing—

(Continued from Page 1)

urged exploration of periodic relicensure based upon continuing education or examination.

Dr. Welch said that at present six state medical societies require evidence of continuing postgraduate education for continuation of membership. In 1969, the American Medical Association established a "Physician's Recognition Award," based on postgraduate educational activities.

He also pointed out that the American Specialty Boards in March, 1973, recommended voluntary periodic recertification of medical specialists, and that the American Board of Surgery has approved this principle.

The American College of Surgeons already supports voluntary participation in continuing examinations. Dr. Welch said that the "real teeth will be inserted in the recommendations of the American Board of Medical Specialties if the words, 'voluntary' and 'certification' are replaced by 'involuntary' and 'licensure.'"

"At the present time, recertification can be regarded as a merit badge—a nice decoration to wear, but not of economic significance; in the future, if relicensure is based upon recertification it could become a matter of economic life or death."

Obesity May Be Caused By Hormonal Aberration

Obesity may arise from heightened levels of enzymes, caused by defects in hormonal control.

This view was presented by Drs. J. P. O'Leary, J. I. Hollenbeck and J. J. Cerda of the University of Florida at the annual meeting of the American College of Surgeons.

Ten of 12 obese patients studied showed a significant increase in the levels of disaccharidase, the team reported. The remaining two were taking insulin, and their blood sugars were well controlled.

The physicians said that another patient receiving insulin had blood sugar elevation, and moderately elevated disaccharidase levels.

"We postulate that there is an intricate hormonal feedback mechanism that may either be associated with insulin or with blood glucose levels," they said.

'Artificial Gut'—

(Continued from Page 2)

min K (5 mg) are "generally given by mouth on a daily basis and Vitamin B-12 by periodic intramuscular injection."

After insertion of an administration set (microdrip), the tubing is linked to a Holter pump tubing set. The pump was selected for its compact size and ability to run on its own rechargeable battery for up to 3-4 hours. The patient uses the battery power when moving about the home, but at other times, the pump is connected to an external electric source to prevent battery failure.

"All patients who enter the artificial gut system are trained in general sterile technique and receive an abbreviated course in the general principles of parenteral nutrition and fluid and electrolyte physiology," they said. The overall cost for infusing a patient seven nights a week is about \$450 per month, while the initial outlay for equipment is \$500.

The physicians said that of the 14 patients who finished the training program, nine originally showed signs of chronic emaciation, four had an acute short bowel syndrome with an anticipated onset of severe weight loss and malnutrition, and one patient had "multiple enterocolic-cutaneous bowel fistulas present for eight months despite several reconstructive surgical procedures."

In general, the team reported, steady increase in weight was promoted by 24-hour infusion, while intermittent overnight infusion maintained their weight at a stable level.

"Eleven of the 13 patients can be said to have been completely rehabilitated insofar as they were free of gastrointestinal symptomatology, had gained weight with a striking increase in their sense of well-being, strength and exercise tolerance, and were able again to enjoy a pleasant, fulfilling lifestyle.

"In addition, they were independent of frequent hospitalization and able once again to enjoy a normal family life. However, none were able to return to fulltime employment primarily because of the time required to infuse the necessary glucose calories. Usually, 12-14 hours are needed to infuse the glucose at its maximal rate of delivery of 1.0 gm/kg/hour."



Dr. J. H. Kirklin, John H. Gibbon Jr. Lecturer, discusses the cardiovascular subsystem in surgical patients.

Asepsis—

(Continued from Page 6)

examination. Deaths were not associated with a complication of hyperalimentation."

The physicians emphasized the necessity of aseptic technique. "Louria points out that most generalized Candida infections occur from direct inoculation of the organism into the blood stream from indwelling catheters or intravenous infusions," they said. "Bernard et al reported a correlation between catheter tip infection rate and the technical expertise of the physician inserting the subclavian catheter. Thus, it is our belief that the recent increase in fungal infections in patients receiving hyperalimentation results from a breakdown in aseptic technique."

The team urged that preparation of the nutrient solution be done only under filtered air and laminar flow hoods. "The maintenance of long-term sterility and patency of the catheters should be controlled and supervised by a few highly motivated and interested physicians," they declared. "A sterile technique for insertion of the catheter should be rigidly employed, and an experienced physician should be present when the catheters are inserted. Lastly, routine chest roentgenogram should always be performed immediately following catheter insertion to confirm accurate placement of the tip in the middle of the superior vena cava."

Surgical Congress News
1414 Ave. of Americas
New York, N.Y. 10019

Bulk Rate
U. S. Postage
PAID
Waterloo, Wis.
Permit No. 20